

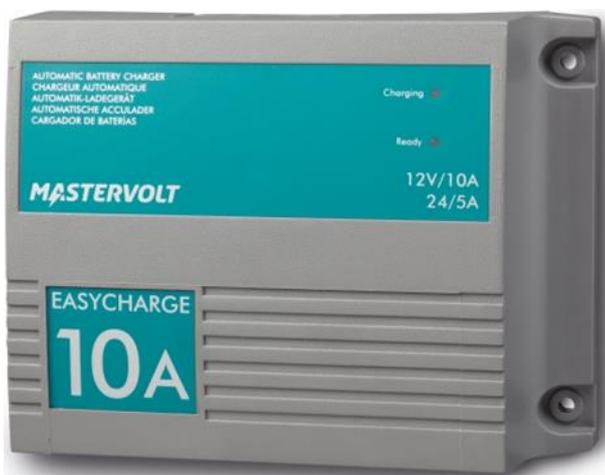
MASTERVOLT

THE POWER TO BE INDEPENDENT

EASY CHARGE

Weather-resistant fixed mount Battery Charger

6 AMP AND 10 AMP MODELS



USER AND INSTALLATION MANUAL

1000009118/03

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-  Um diese Anleitung in anderen Sprachen herunterladen, besuchen Sie bitte unsere Website:
-  Pour télécharger ce manuel dans d'autres langues, consultez notre site Web :
-  Para descargar este manual en otros idiomas, visite nuestro sitio web:
-  Per scaricare questo manuale in altre lingue, visitare la pagina del prodotto sul nostro sito Web:
www.mastervolt.com



IMPORTANT SAFETY INSTRUCTIONS

READ AND SAVE THESE INSTRUCTIONS

GENERAL

- 1 Before using the charger, read and follow the instructions and specifications contained in this user's manual and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of the battery. Review cautionary marking on these products.
- 2 This charger is designed to be permanently connected to an AC and DC electrical system. The charger is suitable for charging flooded, gel and AGM lead-acid batteries only. Never charge non-rechargeable batteries.
- 3 Use of spare parts or accessories not supplied by Mastervolt may result in a risk of fire, electric shock, or injury to persons.
- 4 Make sure that all wiring and electrical connections are in good condition and undamaged. Make sure that the wiring is not pinched or in contact with warm surfaces or sharp edges.
- 5 The charger may get hot during operation. Do not cover.
- 6 Do not place the charger on top of the battery while charging.
- 7 Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service engineer.
- 8 Do not open the charger. There are no serviceable parts inside. Repair shall be done by a Mastervolt authorized repair service agent only.
- 9 Before attempting any maintenance or cleaning, disconnect the charger from both AC and DC electrical systems.
- 10 This charger may not be used by children or by those who cannot read and understand the manual if they are not supervised by a responsible person who can guarantee that the charger is being used in a safe manner. Keep the charger away from children.
- 11 Connection to the mains supply and safety measures must be executed in accordance with the locally applicable standards and regulations for electrical installations.
- 12 Safety class I. This charger is equipped with an electrical cord having an equipment-grounding conductor and a grounded plug. It must be connected to a grounded socket outlet that is protected by a Ground Fault Circuit Interrupter (GFCI) breaker.
- 13 If it is necessary to remove a battery, disconnect the charger from the mains supply. Then remove the grounded terminal from the battery. Make sure all accessories are off, so as not to cause an arc

WARNINGS REGARDING THE USE OF BATTERIES

- 1 A battery being charged will emit a mixture of explosive gasses. Always provide proper ventilation in the area around the battery while the battery is being charged. Do not smoke or create sparks in the vicinity of the battery.
- 2 Someone should be within range of your voice or close enough to come to your aid when you work near a battery.
- 3 While working on batteries wear protective eye-glassing and clothing. Observe accident protection rules.
- 4 Battery acid is corrosive. If battery acid contacts skin or clothing, wash immediately with plenty of soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.
- 5 Do not short circuit batteries, as this will result in explosion and fire hazard! Be extra cautious to reduce risk of dropping a metal tool onto a battery.
- 6 Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- 7 NEVER charge a frozen battery
- 8 NEVER charge a damaged battery

SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Model	EasyCharge 6A-1	EasyCharge 10A-2
Article number:	43310600–Europlug (CEE 7/7) 43310602–UK-plug (BS1363 type G)	43321000–Europlug (CEE 7/7) 43321002–UK-plug (BS1363 type G)
Input voltage:	120/230 V (90-265 V), 50/60 Hz	120/230 V (90-265 V), 50/60 Hz
Max. AC input current	2A	2.5A
Protection class:	Class I	Class I
Number of outputs:	1	2
Maximum charge current:	6 Amp	10 Amp @ 12V / 5 Amp @ 24V
Fuse rating DC cables:	10 Amp	10 Amp
Nominal battery voltage:	12V	12V / 24V (see INSTALLATION)
Charge voltage (per output)		
- Absorption:	14.3V ($\pm 0.2V$)	14.3V ($\pm 0.2V$)
- Float:	13.3V ($\pm 0.2V$)	13.3V ($\pm 0.2V$)
Charge characteristic*:	Regeneration, Bulk, Absorption, Float, Maintenance	
Recommended battery**		
- BCI group size:	Group 24 through 31	Group 24 through 31
- battery capacity:	20 – 120 Ah	35 – 120 Ah
Battery types**:	Any 12V lead acid battery (Flooded / Gel / AGM / Spiral)	
Dimensions (L x W x D):	89 x 163 x 63 mm (3.5 x 6.4 x 2.5 inch)	140 x 198 x 63 mm (5.5 x 7.8 x 2.5 inch)
Weight (excl. cabling):	1.8 kg (4.0 lb)	2.5 kg (5.6 lb)
Protection degree (casing)	IP68	IP68
Ambient temperature:	-20°C to 50°C (-4°F to 122°F)	-20°C to 50°C (-4°F to 122°F)
Protections:	Spark free, Short circuit, Reversed polarity, over voltage, current limited, over temperature	
Conformity:	California Energy Commission (CEC) standards for Small Battery Charger Systems EU directives: 2014/35/EU (LVD), 2014/30/EU (EMC), 2011/65/EU (RoHS)	

* See section THEORY OF OPERATION

** Always follow the instructions published by the battery manufacturer

WARRANTY SPECIFICATIONS

Mastervolt assures the proper operation of this product for the duration of two (2) years, under the condition that the product is installed and used according to the instructions in this manual. Installation or use not according to these instructions may result in under performance, damage or failure of the product and may void this warranty. The warranty is limited to the cost of repair and/or replacement of the product. Costs of labor or shipping are not covered by this warranty.

DISCLAIMER

Our products are subject to continual development and improvement. Therefore, additions or modifications to the products may cause changes to the technical data and functional specifications. No rights can be derived from this document. Please consult our most current Terms & Conditions of Sale.

INSTALLATION

Congratulations for choosing the Mastervolt EASY CHARGE battery charger. Before using, please read the entire manual, in particular the section IMPORTANT SAFETY INSTRUCTIONS.

BEFORE INSTALLATION:

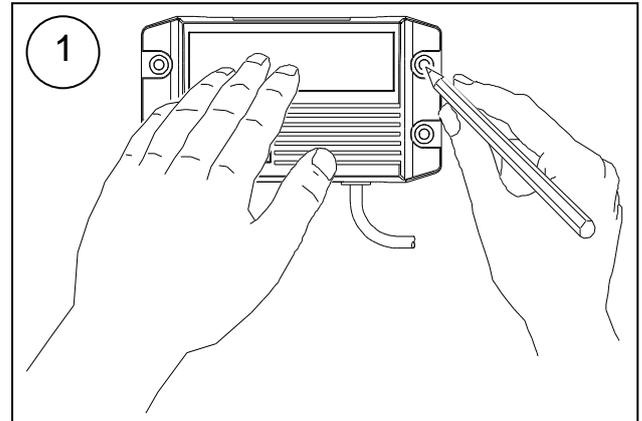
- Check the charger and the cables for possible damage. Do not use if damaged. If in doubt, contact your supplier.
- Disconnect the AC mains plug from the wall socket.
- Disconnect all loads from the battery.

CHOOSING A LOCATION TO INSTALL

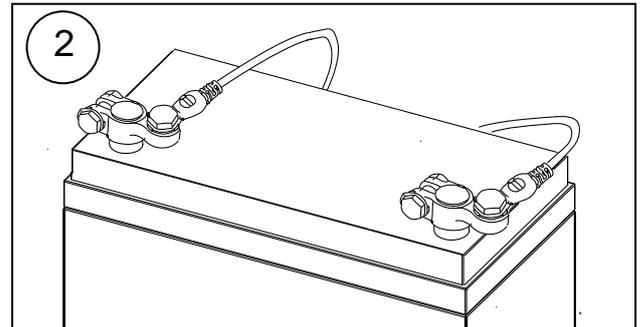
Obey the following stipulations during installation:

- Ambient operating temperature: -20°C ... 50°C / -4°F ... 122°F (power de-rating above 40°C / 104°F to decrease the internal temperature).
- The battery charger must be mounted to a vertical, solid and heat-resistant surface.
- Make sure that the hot air that is developed during operation can be discharged.
- The battery charger requires a minimum of 20 cm/ 8 inch of clearance on every side.
- Locate the battery charge as far away from the battery as DC cables permit.
- Do not install the battery charge straight above the batteries because of possible corrosive sulphur fumes.
- Do not cut the connection cables of the battery charger.
- Although the battery charger fully complies with all applicable EMC limits, it may still cause harmful interference to radio communication equipment. If such interference appears, it is recommended to increase the separation between the battery charger and the equipment, to relocate the receiving antenna or to connect the equipment to a circuit different from that to which the battery charger is connected.

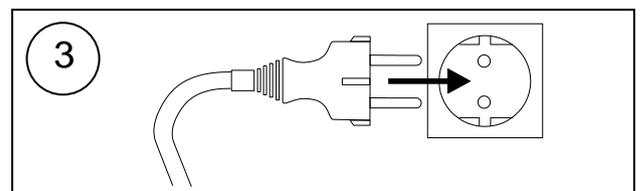
INSTALLATION STEP BY STEP



Mark the position of the four mounting spots. Remove the charger and drill the mounting holes. Fix the charger to the wall using corrosion resistant 4.8mm (3/16") dia. or M5 (#10) bolts, backed by a flat washer, and secured to the mounting surface with a split-ring lock washer.

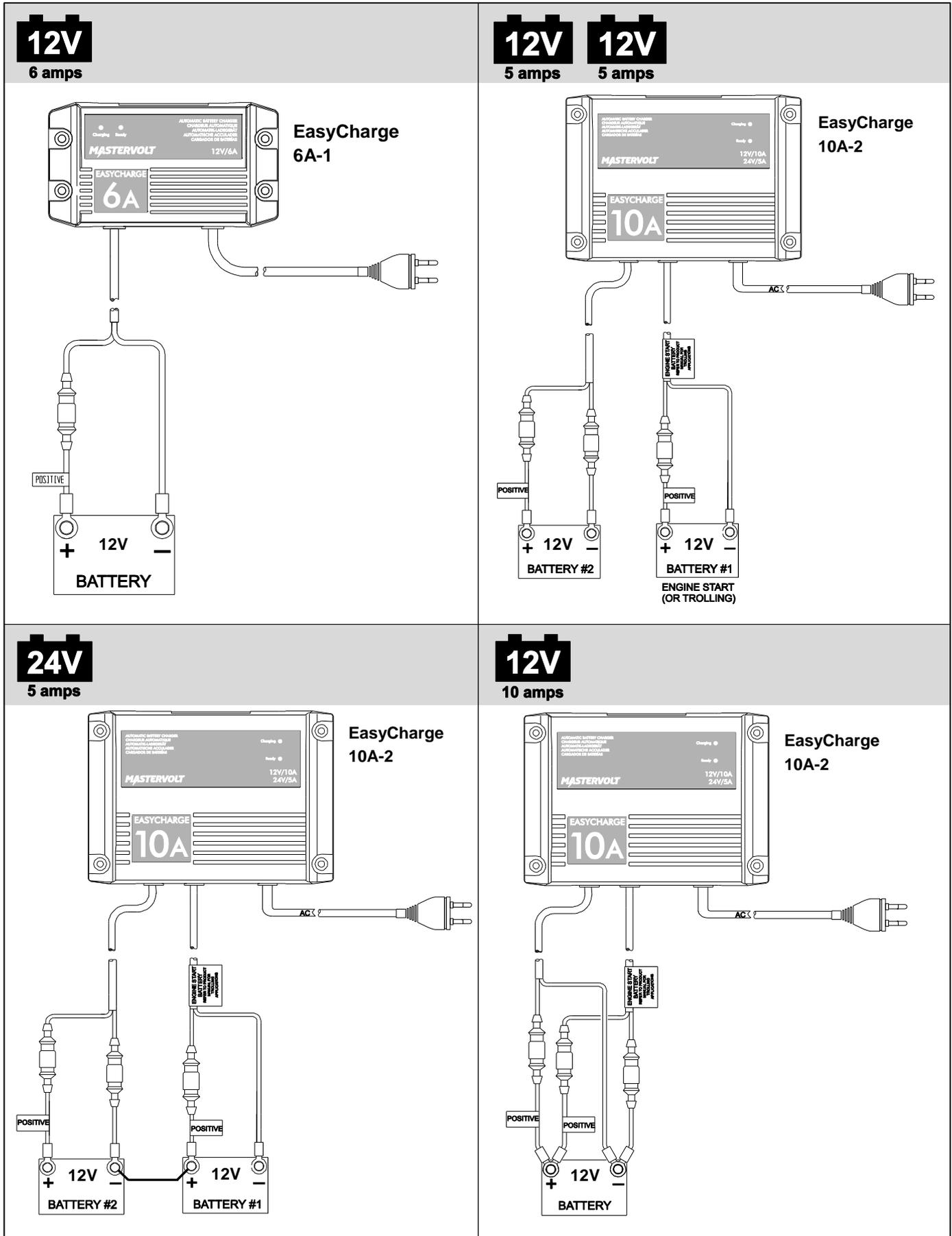


When connecting the battery, the ungrounded terminal must be connected first. Connect the RED charger output to the POSITIVE (POS, P, +) battery post; connect the BLACK charger output to the NEGATIVE (NEG, N, -) battery post. See CONNECTION DIAGRAMS for details.



Insert the mains plug in a grounded wall socket.

CONNECTION DIAGRAMS

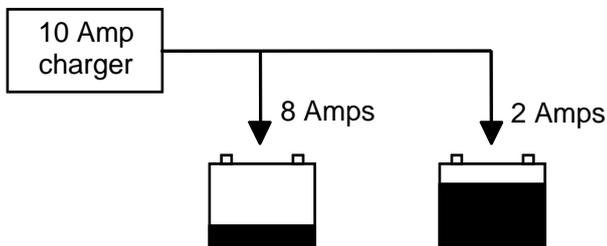


BATTERY CHARGING

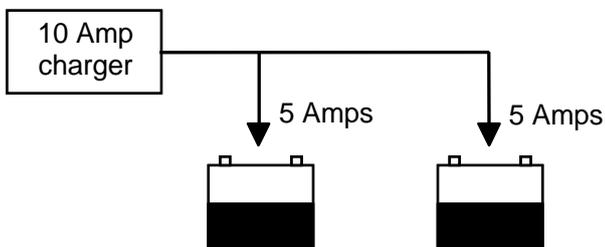
Charging can be stopped at any time by disconnecting the mains plug from the wall socket.

The EasyCharge 10A-2 has two charge outputs. It can quickly charge two batteries using the Sense-Send Technology. The charger senses the power needed per battery and sends the allocated power needed.

If the two batteries connected to the charger have different discharged levels, the charger will send most of the available power to the battery needing the most power and a lower amount to the battery needing less power. This results in faster charging.



If the two batteries have drained equally, the charger will send the same amount of power to each battery.



MAINTENANCE

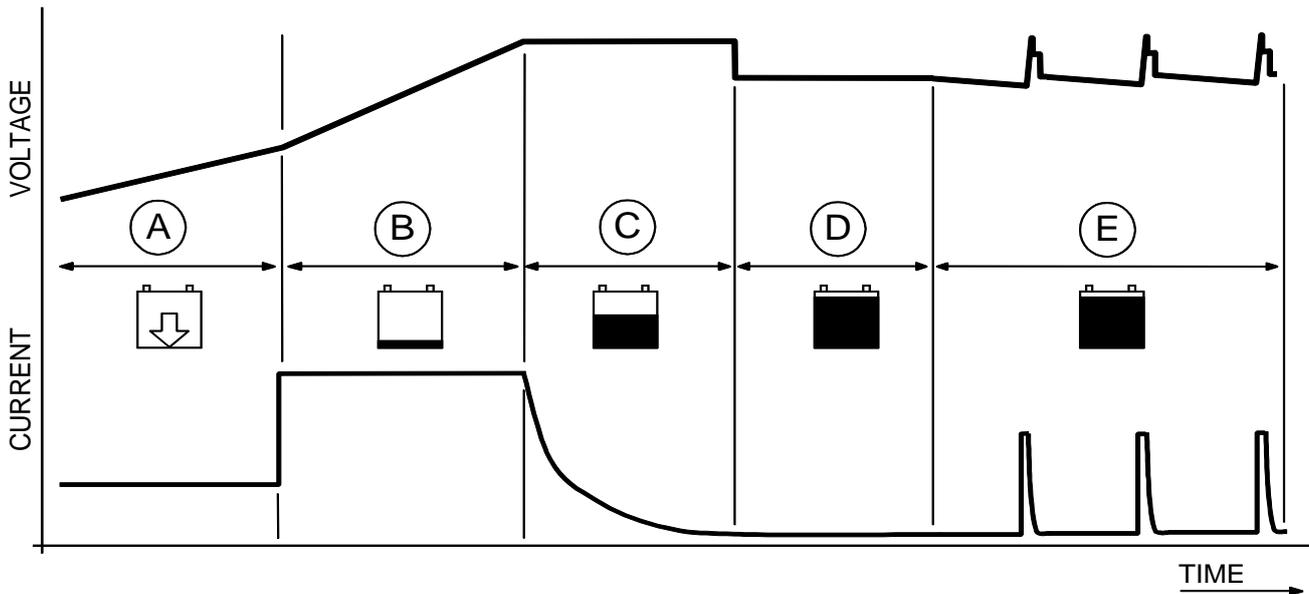
Examine your electrical installation on a regular base, at least once a year. Defects such as loose connections, damaged wiring etc. must be corrected immediately.

If necessary, use a soft clean cloth to clean enclosure of the battery charger. Do not use any liquids or corrosive substances, such as solvents, alcohol, petrol or abrasive components.

STATUS LEDS

LED illuminated		Meaning
Charging	Ready	
RED	(OFF)	REGENERATION or BULK stage. The battery is being charged
RED	GREEN	ABSORPTION stage
(OFF)	GREEN	FLOAT stage. The battery is fully charged now
RED (slow)		
Blinking	GREEN	FLOAT stage. The battery is fully charged now, and a load is drawing current

THEORY OF OPERATION



Battery charging is accomplished in the following automatic stages:

- A. **REGENERATION:** The charger verifies connections are good and the battery can accept a charge. If the batteries are deeply discharged a low charging currents are used to allow the battery to reach a normal battery voltage again without harming the battery. When the charger reaches 10V for 30 seconds, the charger will continue with the next stages.
- B. **BULK:** At this stage the charger delivers its maximum current for quick charging from 0 to 75%. When the battery holds the voltage of 14.3V for 30 seconds, the charger switches to the next stage
- C. **ABSORPTION:** The charger has reached its maximum charge voltage and the charge current will slowly decrease until the battery is charged up to 100%.
- D. **FLOAT:** The battery is fully charged now. The charger keeps the battery at 13.3V for a period of time and then shuts down.
- E. **MAINTENANCE:** The charger will monitor the battery and if the battery voltage drops below 12V or if 14 days have passed since the last charge, the charge cycle will start automatically.

DECOMMISSIONING

To put the charger out of operation, follow these instructions in order of succession:

- 1 Disconnect the mains plug from the wall socket
 - 2 Remove the grounded DC-lead from the battery post.
 - 3 Remove the other DC-lead from the battery
- Now the charger can be demounted in a safe way.

CORRECT DISPOSAL OF THIS PRODUCT



This product is designed and manufactured with high quality materials and components, which can be recycled and reused. When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2012/19/EU. Please be informed about the local separate collection system for electrical and electronic products. Please act according to your local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences to the environment and human health.

TROUBLE SHOOTING

If you cannot solve a problem with the aid of this chapter, contact your local Mastervolt Service Centre. See www.mastervolt.com/technical-support. If you must contact your local Mastervolt Service Center to solve a problem, please make sure you have the part number and batch number present; see product ID-label at the bottom side of the product.

Problem	Possible cause	Action
No LEDs illuminated	Charger is in MAINTENANCE mode	Nothing, at MAINTENANCE mode the charger switches off to save energy. See section THEORY OF OPERATION
	No AC mains supply	Check AC mains supply
	Internal failure	Contact Mastervolt Service Centre
Red LED stays on for more than 24 hrs.	Defective battery	Check battery and replace if necessary
	Charger has reduced its output voltage below normal level due to a DC overload or a DC short circuit.	Remove the source of the overload or short circuit. Disconnect the charger's black (NEGATIVE) terminal from the battery. Reapply AC power and the green LED should illuminate now.
	On-board DC systems draw more current than the charger can supply	Turn off all connected DC equipment while charging.
Red and green LED on for more than 24 hrs.	On-board DC systems draw between 1.5 – 3.5 A	Turn off all connected DC equipment while charging.
	Defective battery	Check battery and replace if necessary
	Too low AC input voltage	Check AC mains supply
Green LED stays on when the battery is known to be low	No battery connected	Connect battery (section INSTALLATION)
	Reversed polarity	Check if the charger's positive lead (red color) is connected to the positive battery post
	DC-short circuit	Check DC-wiring
	Fuse defect	Check fuse and replace if necessary (see section SPECIFICATIONS for correct rating)
	Faulty or corroded battery connections	Check battery connections
	Defective battery	Check battery and replace if necessary
Charge current too low	Batteries almost fully charged	Nothing, this is normal when the battery is almost fully charged.



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